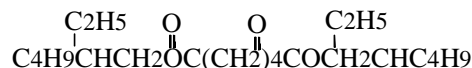


BIS(2-ETHYLHEXYL)ADIPATE

CAS Registry Number: 103-23-1

Molecular Formula: $C_{22}H_{42}O_4$



Bis(2-ethylhexyl)adipate is a colorless or light-colored, combustible, oily liquid with a slight aromatic odor. It is insoluble in water, glycerine, and glycols. It is soluble in alcohol, ether, acetone, acetic acid, and most organic solvents (HSDB, 1993).

Physical Properties of Bis(2-ethylhexyl)adipate

Synonyms: adipic acid bis(2-ethylhexyl)ester; di-2-ethylhexyl adipate; dioctyl adipate; DEHA

Molecular Weight:	370.58
Boiling Point:	214 °C at 5 mm Hg
Melting Point:	-67.8 °C
Flash Point:	385 °F
Vapor Density:	12.8 (air = 1)
Vapor Pressure:	2.4 mm Hg at 200 °C
Density/Specific Gravity:	0.922 at 25/4 °C (water = 1)
Conversion Factor:	1 ppm = 15.2 mg/m ³

(HSDB, 1993; Sax, 1987; Sax, 1989)

SOURCES AND EMISSIONS

A. Sources

Bis(2-ethylhexyl)adipate is primarily used as a plasticizer. It is also used as a functional (hydraulic) fluid, a solvent, and in aircraft lubricants (HSDB, 1993). The primary stationary sources that have reported emissions of bis(2-ethylhexyl)adipate in California are primary metal industries manufacturing (ARB, 1997b).

B. Emissions

The total emissions of bis(2-ethylhexyl)adipate from stationary sources in California are estimated to be at least 1,200 pounds per year, based on data reported under the Air Toxics "Hot Spots" Program (AB 2588) (ARB, 1997b).

C. Natural Occurrence

Bis(2-ethylhexyl)adipate is not known to occur as a natural product (HSDB, 1993).

AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient measurements of bis(2-ethylhexyl)adipate.

INDOOR SOURCES AND CONCENTRATIONS

No information about the indoor sources and concentrations of bis(2-ethylhexyl)adipate was found in the readily-available literature.

ATMOSPHERIC PERSISTENCE

No information about the atmospheric persistence of bis(2-ethylhexyl)adipate was found in the readily-available literature.

AB 2588 RISK ASSESSMENT INFORMATION

Bis(2-ethylhexyl)adipate emissions are not reported from stationary sources in California under the AB 2588 program. It is also not listed in the California Air Pollution Control Officers Association Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines as having health values (cancer or non-cancer) for use in risk assessments (CAPCOA, 1993).

HEALTH EFFECTS

Probable routes of human exposure to bis(2-ethylhexyl)adipate (DEHA) are inhalation, ingestion, and dermal contact.

Non-Cancer: Bis(2-ethylhexyl)adipate may be irritating to the eyes or may cause burning of the skin upon contact (HSDB, 1995). There is some evidence in experimental animals that exposure by ingestion results in body and organ weight changes. Injected bis(2-ethylhexyl)adipate has caused early fetal death, decreased fertility, and decreased fetal weight in experimental animals (U.S. EPA, 1994a).

The United States Environmental Protection Agency (U.S. EPA) has established an oral Reference Dose (RfD) of 0.6 milligrams per kilogram per day, based upon reproductive and developmental effects in rats. The U.S. EPA estimates that consumption of this dose or less, over a lifetime, would not likely result in the occurrence of chronic non-cancer effects. No Reference Concentration (RfC) has been established (U.S. EPA, 1995a).

Cancer: Bis(2-ethylhexyl)adipate has been shown to cause liver tumors in female mice. The U.S. EPA has classified bis(2-ethylhexyl)adipate in Group C: Possibly carcinogenic to humans, based on limited evidence in experimental animals and no human evidence (U.S. EPA, 1995a). The recommended inhalation potency value for use in cancer risk assessments is 0.0012 (milligram per kilogram per day)⁻¹. In other words, the potential excess cancer risk for a person exposed over a lifetime to 1 milligram bis(2-ethylhexyl)adipate per kilogram per day is estimated to be no greater than 1,200 in 1 million. The International Agency for Research on Cancer has classified bis(2-ethylhexyl)adipate [di(2-ethylhexyl)adipate] in Group 3: Not classifiable, inadequate evidence as to its carcinogenic potential (IARC, 1987a).

